

IRVINE

ARTF
ALMOST READY TO FLY

Tutor 40 II

INSTRUCTION MANUAL



Suitable for **Electric**
or **I.C. Engine** Power

Congratulations on the purchase of your Irvine Tutor 40 II Radio Control Model Aircraft. Please take some time to carefully read these instructions before assembly and your first flights.

The Irvine Tutor 40 II is an ideal first model or aileron trainer she will reward you with many hours of superb flying and enjoyment!

Tutor 40 II Specification:

Wingspan 62 3/8" (1635mm)
Length 47 1/4" (1200mm)
Engine..... .40-.46 2-Stroke (Not included)
Motor..... 700 watt (Not included)

Items required to complete the Tutor 40 II

Glow Engine version Requires

.40-.46 2-Stroke engine
4 Channel Proportional Radio Control System
Model Engine Fuel
Model Engine Starter and Glow Plug Battery (for Glowstart)
Hand Tools and Adhesive
Fuel tubing and propeller suitable for engine

Electric Conversion Requires

KMS Quantum 4120/05 Brushless Motor
Arrowind 60amp Electronic Speed Controller (ESC)
Intellect 4S 4000 25C Li-Po Flight Battery
4 Channel Proportional Radio Control System
12 x 6 Propeller

PLEASE READ CAREFULLY

This R/C aircraft is not a toy! If misused or abused, it can cause serious bodily injury and/or damage to property. Fly only in open areas and preferably at a dedicated R/C flying site. We suggest having a qualified instructor carefully inspect your aircraft before its first flight. Please carefully read and follow all instructions included with this aircraft, your radio control system and any other components purchased separately.

TOOLS AND MATERIALS REQUIRED

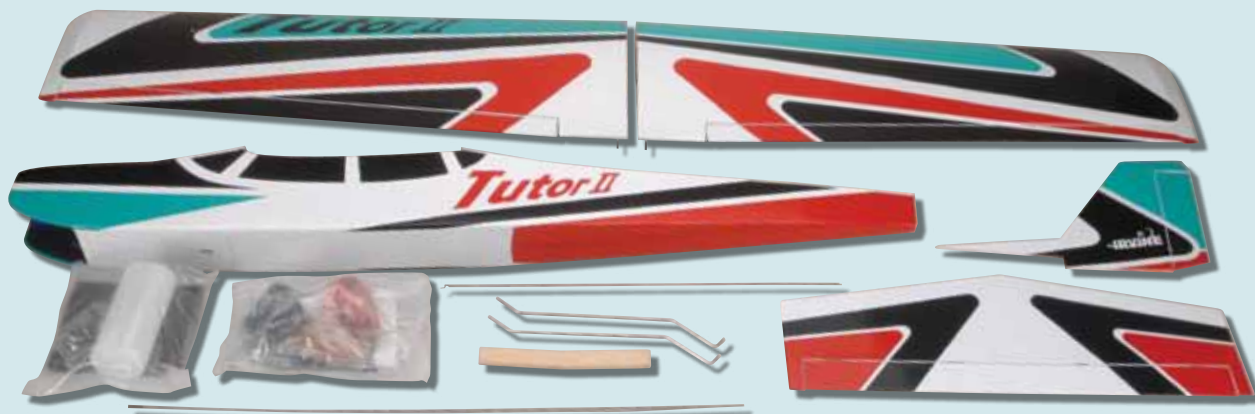
To complete the assembly of the Tutor 40 II, you will require a few hand tools and suitable adhesives:

- Non-permanent marker pen
- Clear tape or masking tape
- Modelling knife
- Small screwdrivers
- Pair of pliers
- Ruler and pencil
- Tissue or cleaning cloth

Glues:

- 5 minute epoxy
- 30 minute or 1 hour epoxy
- Cyanoacrylate - super glue (medium)

KIT CONTENTS



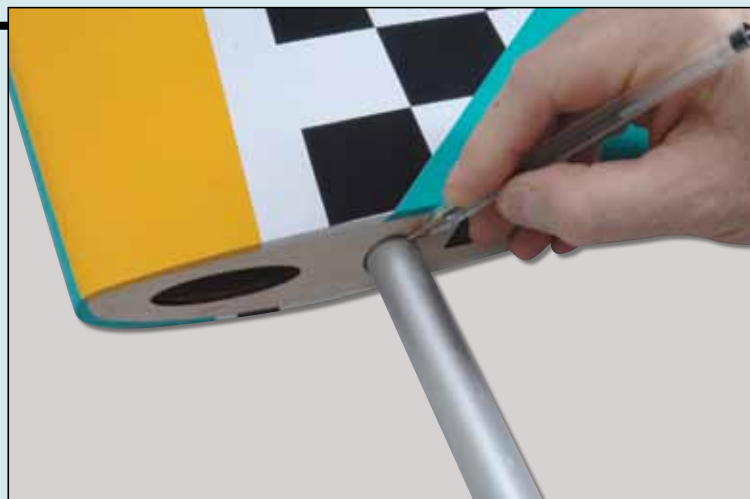
JOINING THE WINGS

Stage 1

Locate the aluminium wing joining tube and insert it half into one of the wing panels as shown. Using a pen, half mark its centre line.

Stage 2

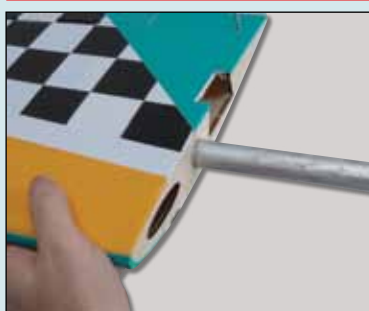
Apply plenty of 5 minute epoxy to one side of the wing joining tube and insert it fully into the wing. Use tissue or a cloth to wipe up any excess glue that squeezes out.



1. Ensure tube is fully inserted in the wing



2.1. Apply sufficient epoxy to the centreline marked in Stage 1



2.2. Slide the tube fully into the wing



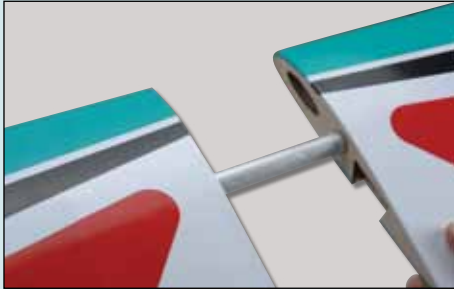
2.3. Wipe off any excess epoxy



3.1. Apply plenty of adhesive

Stage 3

Once the glue has cured, trial fit the second wing panel onto the first, making sure that the two panels meet without an excessive gap. File the end of the tube if necessary to ensure that the wing panels meet. Now apply plenty of epoxy to the wing root rib and the joiner tube as shown. Use 30 minute or 1 hour epoxy to give yourself extra working time. Slide the two wing panels together. Epoxy should ooze from the joint and the excess can be removed with a cloth or tissue before it cures. Use adhesive tape to hold the two panels together as the glue cures ensuring that the panels are correctly aligned.



3.2. Slide the second wing panel into place



3.3. Ensuring a close fit, use tape to ensure alignment while the glue cures

FITTING THE AILERON SERVO

Stage 4

Identify the plywood aileron servo mount and position it on the underside of the wing centralised to the pre-cut servo aperture. Use a pen to mark the position of the mount on the covering. Using a ruler and a sharp knife, carefully cut through and remove the covering film as shown. Attach the mount in place using cyano or epoxy adhesive ensuring the lead cutout is towards the front of the wing.



4.1. Mark around the mount with a pen



4.2. Carefully cut through the film (NOT Wood)



4.3. Apply epoxy or cyano adhesive



4.4. Attach the mount in place

Stage 5



5.1. Fit grommets and ferrules to the aileron servo

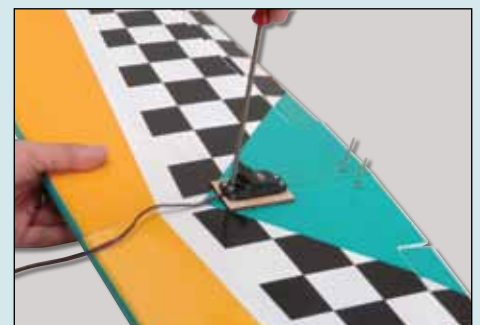
Fit the rubber servo mounting grommets and brass ferrules supplied with your radio equipment in accordance with the instructions. Trim away a small section of the mount for the servo lead exit. Install the servo in its mount and pilot drill (1.5mm) four holes for the mounting screws supplied with your servo. Now screw the servo in position noting the orientation. Take care not to drill into the servo lead.



5.2. Trim the mount for the servo lead's exit



5.3. Pilot drill the mounting holes



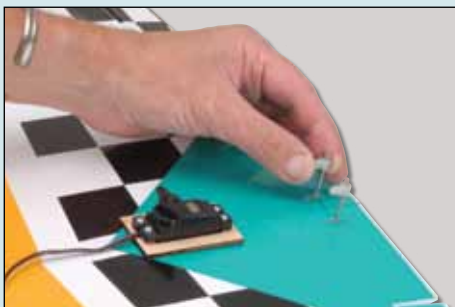
5.4. Screw the servo in position

Stage 6

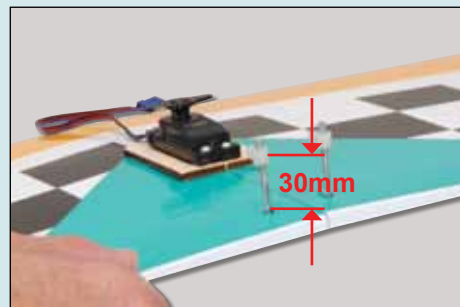
Identify the aileron link parts - two pushrods, aileron horns, two nylon snap links and two swing-in keepers. Using a pair of pliers to hold the pushrod, screw on a nylon snap link until the thread is just visible through the inside of the snap link. Repeat for the second pushrod. Now screw the two aileron horns onto the torque rods already installed in the wing. Ensure that both are screwed on the same amount - they should be approximately 30mm from the wing's surface.



6.1. Screw on a snap link



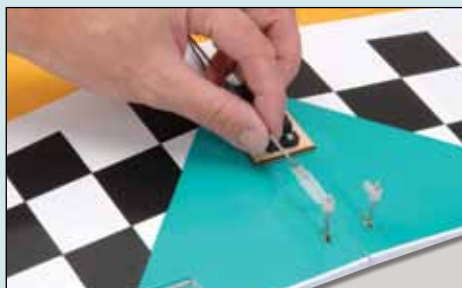
6.2. Screw on the aileron control horns



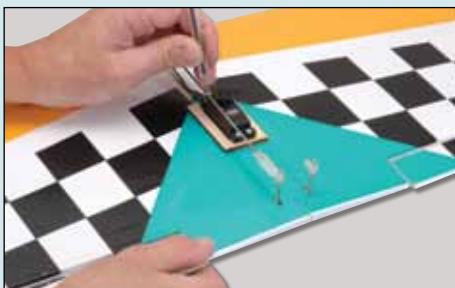
6.3. Ensure the horns are screwed on equally

Stage 7

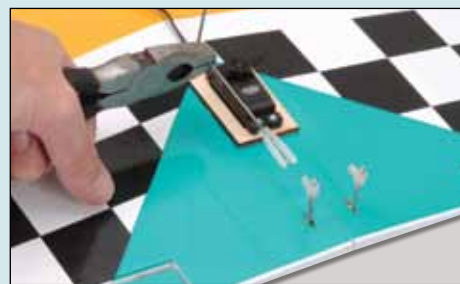
Connect up the aileron servo to the aileron channel in the receiver, connect the receiver battery and turn on the transmitter. Centre the aileron trims and make sure both ailerons are level. Attach the first snap link to the aileron control horn as shown. Carefully mark the position where the pushrod passes the servo's control horn. Using a pair of pliers, bend the pushrod 90° at this marked point. Using a pair of side cutters, trim off the excess pushrod length, leaving 6mm after the bend.



7.1. Connect the snap link



7.2. Mark the pushrod where it crosses the control horn, 11mm from the servo centre



7.3. Bend the pushrod 90° at this point



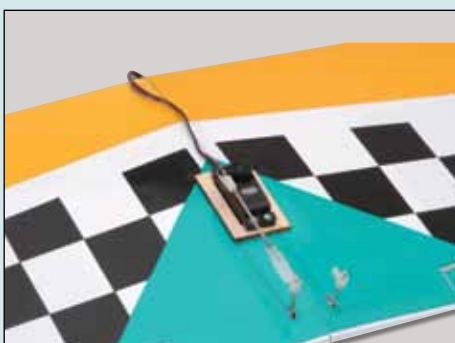
7.4. Trim off the excess length beyond 6mm after the bend

Stage 8

Now connect the bent pushrod to the servo horn using a hole approximately 11mm from the centre. Slip a swing in keeper over the end of the pushrod and snap it closed over the pushrod. Repeat this for the second pushrod, ensuring the ailerons remain level. To complete the linkages, slip a short length of Silicon fuel tubing over each snap link.



8.1. Connect the pushrod to the servo horn



8.2. Snap on a keeper



8.3. Complete the second pushrod in the same way



8.4. Short length of fuel tube secures each snap link

FITTING THE TAILPLANE

Stage 9

Using a sharp knife, carefully remove the film covering from the tail and fin slots at the rear of the fuselage. Make sure that you do not remove any wood from the slots as this will affect the alignment of the tail and fin.



9.1. Trim the covering from the fin slot



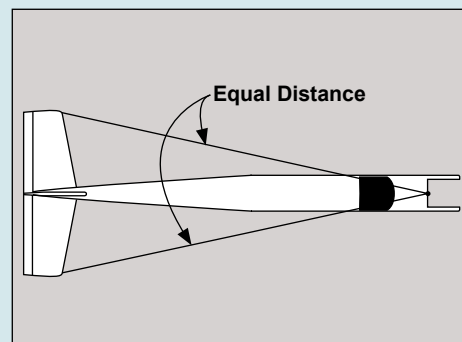
9.2. Trim the covering from the tail slots

Stage 10

Check the fit of the tail in its slot. Make sure it is square and centred to the fuselage by taking measurements as shown in the diagram but don't glue anything yet.



10.1. Trial fit the tail in its slot



10.2. Alignment checks

Stage 11

With the tail correctly aligned, mark the shape of the fuselage on the top and the bottom of the tailplane using a water-soluble/non-permanent felt pen.



11.1. Mark the top of the tail



11.2. Followed by the bottom

Stage 12

Now remove the tailplane and using a sharp knife and a ruler **CAREFULLY** cut 1mm inside the marked lines. Remove the covering from the top and the bottom of the tailplane. **Make sure you only cut through the film and not the wood, otherwise the tailplane may be severely weakened.**



12.1. Carefully cut inside the marked lines. **DO NOT** cut into the wood beneath!



12.2. Remove the film from the top of the tailplane

Stage 13

Now apply sufficient epoxy to the top and bottom of the tailplane. Use 30 minute or 1 hour epoxy to give yourself plenty of working time. Insert the tail in its slot in the fuselage and re-check the alignment as in Stage 10. Excess adhesive should be cleaned off with a rag or tissue before it cures.

Make sure it is the correct way up.



13.1. Apply plenty of epoxy



13.2. Slide the tailplane in position

FITTING THE FIN

Stage 14

Trial fit the fin in its slot. With the fin correctly aligned, mark the shape of the fuselage on both sides of the fin using a water-soluble/non-permanent felt pen. Mark the shape of the fin extension on the fuselage too.



14.1. Mark the shape of the fuselage on the fin



14.1. Mark the shape of the fin on the fuselage

Stage 15

Now remove the fin and using a sharp knife and a ruler CAREFULLY cut just below the marked lines. Remove the covering from the left and the right side of the fin. Make sure you only cut through the film and not the wood, otherwise the fin may be severely weakened. Remove the film from the top of the fuselage in the same way.



15.1. Remove the film from the fin



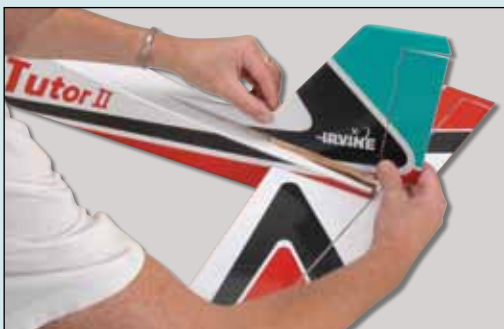
15.2. Remove the film from the top of the fuselage

Stage 16

Now apply sufficient epoxy to both sides of the fin and along the underside. Use 30 minute or 1 hour epoxy to give yourself plenty of working time. Insert the fin in its slot in the fuselage and check the alignment. Ensure that it is perpendicular to the tailplane. Excess adhesive should be cleaned off with a rag or tissue before it cures.



16.1. Apply plenty of epoxy



16.2. Slide the fin in position



16.3. Remove any excess epoxy before it cures

Stage 17

Locate the undercarriage groove in the underside of the fuselage. Carefully trim away the film using a sharp knife. Insert the main undercarriage wire legs in their pre-drilled holes in the fuselage underside. Now locate the two moulded saddle clamps and hold in position while marking the fuselage for the mounting holes. Pilot drill (1.5mm) the holes for the saddle clamps and screw in position.



17.1. Trim away the covering



17.2. Fit the undercarriage legs



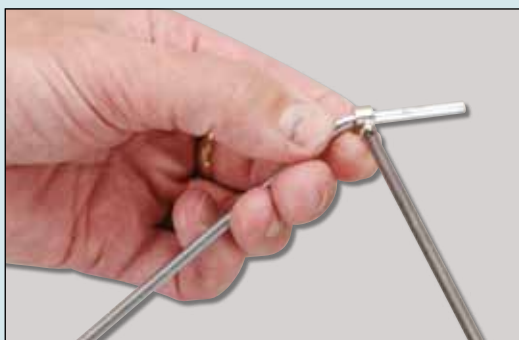
17.3. Mark the position of the saddle clamps



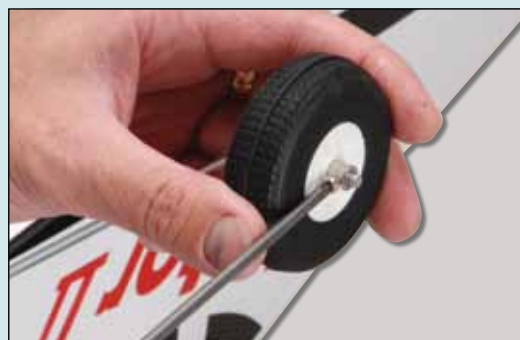
17.4. Screw the clamps in place

Stage 18

Locate the wheel retaining collets. Slide the first one on to the undercarriage to just before the bend and tighten the retaining screw. Slide a wheel on, then fit a second collet, ensuring that the wheel is free to spin. Add a drop of cyano to each retaining screw to secure



18.1. Fit a collet to the axle



18.2. Retain the wheel with a second collet

Stage 19

Locate the nosegear steering arm and connect it to the pre-formed z-bend in the noseleg pushrod. Slide the pushrod into its tube in the firewall and locate the steering arm in the steering block with its retaining screw forward. Slide the noseleg through the first block, through the steering arm and into the engine mount. With the steering arm held in line with the axle, tighten the retaining screw. There is a flat on the nose leg wire facing the screw



19.1. Fit the steering arm on the pushrod



19.2. Install the steering arm



19.3. Slide the noseleg in position



19.4. Tighten the steering arm's screw

Stage 20

Fit a collet to the noseleg axle, slide a wheel onto the axle and retain with a second collet ensuring the wheel can spin freely. Add a drop of cyano to each retaining screw to secure.



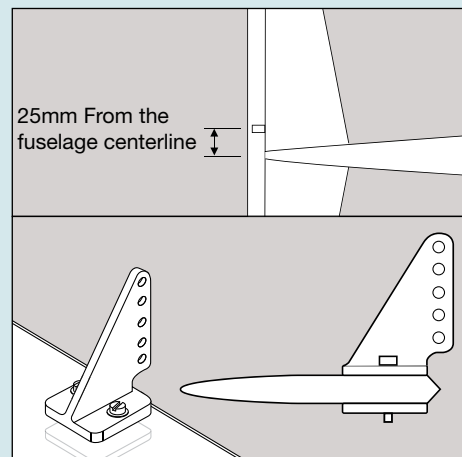
20.1. Fit the nosewheel

hinge line as shown in the diagram. Mark the position of its mounting holes and pilot drill the elevator. Screw the horn to the elevator noting that the screws self-tap into the nylon plate on top. Remove any excess length of screw with side cutters.

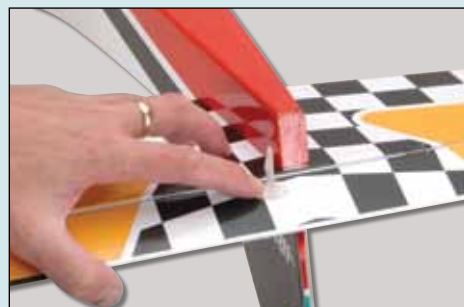
RADIO INSTALLATION

Stage 21

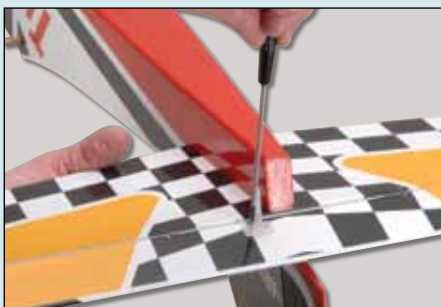
Locate the elevator and rudder control horns. Turn the model upside down. The elevator horn is fitted to the underside of the left hand side of the tail (looking from the underside with model pointing away from you). Locate the horn 25mm from the fuselage centre-line and align its holes with the



21.3. Horn aligned with the hinge line



21.1. Horn located under the elevator



21.2. Screw the horn in position



21.4. Screws self-tap into moulded plate on top



21.5. Clip off any excess

behind). Again its holes should be aligned with the rudder hinge line, then pilot drilled and screwed to the rudder with a pair of screws terminating in a moulded plate on the other side.



22.1. Position the horn as shown



22.2. Screw in place

Stage 22

The rudder horn is fitted in exactly the same way as the elevator. Note that it should be located on the left hand side of the rudder (when viewed from

Stage 23

Test fit your elevator and rudder servos in the pre-fitted radio tray. Note that the output horns are orientated towards the front of the model. Now fit the rubber grommets and brass ferrules supplied with your radio, pilot drill the servo tray and screw the servos in position using the screws supplied with your radio.



23.1. Test fit your servos in the tray



23.2. Pilot drill the tray then screw servos in position

Stage 24

Prepare the elevator pushrod by screwing a nylon clevis onto one end until the thread just appears through to the inside of the clevis. Use a pair of pliers to hold the pushrod wire while you do this. Locate the slot at the rear of the fuselage for the elevator pushrod and carefully trim away the covering as shown. Now insert the pushrod into its pre-fitted guide tube. Temporarily attach the clevis to the elevator but do not snap it shut yet.



24.1. Screw on a clevis



24.2. Trim away covering



24.3. Insert pushrod and connect to elevator

Stage 25

With the elevator held level and the elevator servo centralised, mark where the pushrod crosses the servo's control horn. Using a pair of pliers, bend the pushrod down through 90° at this point and cut off any excess pushrod wire leaving a 6mm length after the bend. Now locate the pushrod in a hole in the servo horn approximately 11mm out from the centre. Slip a nylon swing-in keeper over the pushrod and clip it to the pushrod to retain.



25.1. Mark the pushrod where it crosses the servo horn



25.2. Bend the pushrod at this point



25.3. Trim off the excess



25.4. Retain with a swing-in keeper

Stage 26

To complete the linkage, disconnect the clevis from the elevator horn. Slide a short piece of fuel tubing over the clevis. Re-connect the clevis (centre hole in the horn) and ensure that the elevator is level with the elevator servo at its neutral position then snap the clevis closed. Slide the tubing back over the clevis for additional security.



26.1. Disconnect the clevis



26.2. Slip a length of fuel tubing over the clevis



26.3. Re-connect the clevis with the tube to secure

Stage 27

Prepare your rudder servo's horn for the steerable noseleg by fitting a pushrod connector as shown. Do not over-tighten the nut as the connector needs to pivot in the horn. Apply a small drop of cyano on the nut to secure. With the servo and noseleg centred, slide the connector over the noseleg pushrod and attach to the rudder servo. Holding the noseleg centred, tighten the grub screw in the connector to retain the pushrod.



27.1. Fit a pushrod connector to your servo horn



27.2. Slide over the pushrod then re-fit the horn



27.3. Tighten with an Allen key



27.4. Glue a block in place to support the tube

Stage 28

Prepare the rudder pushrod by screwing a nylon clevis onto one end until the thread just appears through to the inside of the clevis. Use a pair of pliers to hold the pushrod wire while you do this. Locate the slot in the top of the rear of the fuselage for the rudder pushrod and carefully trim away the covering as shown. Now insert the pushrod into its pre-fitted guide tube. Temporarily attach the clevis to the rudder but do not snap it shut yet.



28.1. Trim away covering



28.2. Insert pushrod and connect to the rudder

Stage 29

With the rudder held level and the rudder servo centralised, mark where the pushrod crosses the servo's control horn on the other side to the noseleg pushrod. Using a pair of pliers, bend the pushrod down through 90° at this point and cut off any excess pushrod wire leaving a 6mm length after the bend. Locate the pushrod in a hole in the servo horn approximately 11mm out from the centre. Slip a nylon swing-in keeper over the pushrod and clip it to the pushrod to retain.



29.1. Mark the pushrod where it crosses the servo horn



29.2. Bend the pushrod at this point and trim off the excess



29.3. Retain with a swing-in keeper

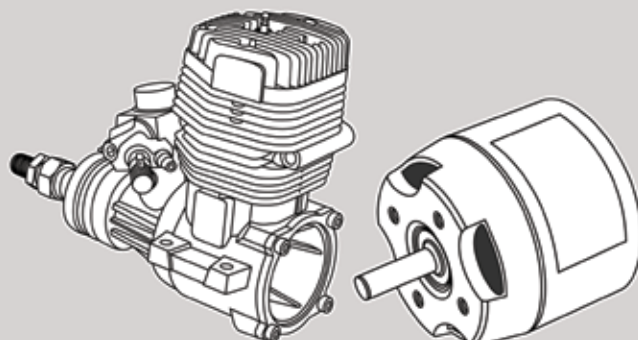
Stage 30

To complete the linkage, disconnect the clevis from the rudder horn. Slide a short piece of fuel tubing over the clevis. Re-connect the clevis (centre hole in the horn) and ensure that the rudder is level with the rudder servo at its neutral position then snap the clevis closed. Slide the tubing back over the clevis for additional security.

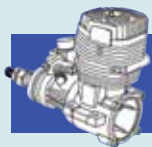


30.1. The completed rudder linkage

You must now decide whether you wish to fit an I.C. (internal combustion) engine or brushless electric motor.



The Irvine Tutor 40 II is suitable for both Electric Motors and I.C. Engines. The following sections cover I.C. Engine installation and Electric Power.



I.C. Engine Installation

I.C. ENGINE FITTING

Stage 1

Prepare the fuel tank by attaching a length of clunk tubing to the unbent tube on the tank bung. Using the tank as a guide, trim the clunk tubing so that when connected to it, the clunk is free to move without touching the rear of the tank. Now insert the bung in the tank with the bent vent pipe to the top. Tighten the retaining screw to seal the bung in position.



1.1. Cut the clunk tube to length



1.2. Tighten the assembly screw

Stage 2

Holding your engine centrally in position on the pre-fitted engine mount, mark the position of the mounting screw holes. Pilot drill (2mm) the moulded engine mount as shown. Attach the z-bent throttle pushrod end to the engine's throttle arm, then feed the pushrod into its tube in the firewall. Attach the engine to its mount using the four self tapping screws supplied.



2.1. Mark the position of the mounting holes



2.2. Pilot drill the mount

Stage 3

Attach two lengths of fuel tubing to the tank - one for feed and one for pressure. Unlatch the hatch on the underside of the model and slide the tank into position ensuring the tubes are not kinked as they pass through the bulkhead. Retain the tank with the two velcro straps already installed in the fuselage. Refit the hatch. It is a good idea to glue a small block of wood to the tray behind the tank to prevent it sliding backwards.



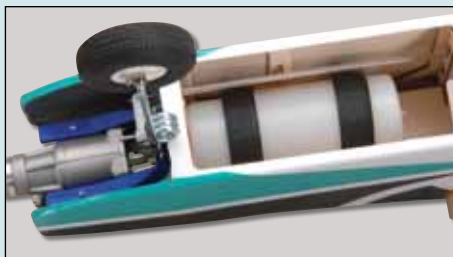
2.3. Fit the throttle pushrod



2.4. Attach the engine



3.1. Slide the tank into its bay



3.2. Retain it with the two velcro straps



3.3. Refit the hatch

Stage 4

4.1. Fit a pushrod connector to your servo horn

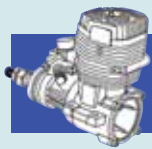
Prepare your throttle servo's horn by fitting a pushrod connector as shown. Do not over-tighten. Apply a small drop of cyano on the nut to secure. Install the rubber grommets and bushes supplied with your servo, then pilot drill the servo tray and screw the servo in position using the screws supplied with your radio. Slip the throttle pushrod connector over the pushrod and re-fit the throttle servo horn. Do not fully tighten the grub screw yet as the throttle is adjusted later.



4.2. Install the throttle servo



4.3. Slide connector over the pushrod then re-fit the horn



I.C. Engine Installation

Stage 5

Connect the fuel feed pipe to the engine's carburettor or remote needle valve as shown here. Connect the pressure pipe to the engine's silencer, then fit the silencer with the screws supplied with the engine.



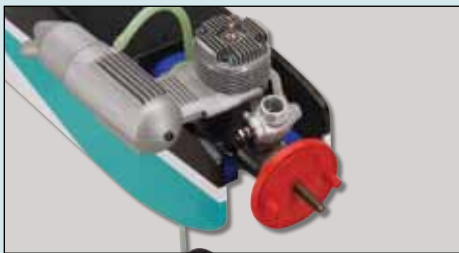
5.1. Connect the fuel tube



5.2. Connect the pressure tube and install the silencer

Stage 6

Remove your engine's prop nut and washer. Install the spinner backplate followed by your propeller. Use the moulded pegs to align the propeller so that when the propeller is in the correct position, the spinner cut-out will align correctly with the propeller. Re-fit your prop washer and nut, then tighten. Fit the spinner nose with the two screws supplied.



6.1. Fit the spinner backplate



6.2. Fit your propeller and tighten



6.3. Re-fit the spinner nose

Stage 7

It is vitally important that the throttle operates correctly and does not bind at either end of its travel. Switch on the radio and centralise the throttle stick. Holding the throttle barrel at its mid throttle position, nip the grub screw tight in the pushrod connector. Use your transmitter's end point adjustment - EPA/ATV - (or adjust mechanically) so that the throttle opens and closes as shown in the diagrams below

(A) Low Throttle



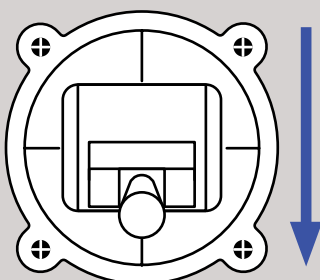
(B) Mid Throttle



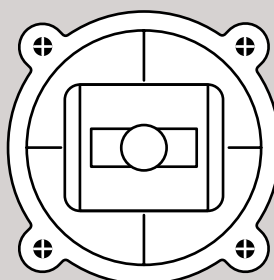
(C) High Throttle



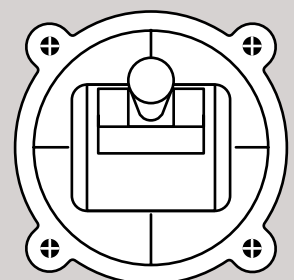
LOW
Throttle
Stick
Position

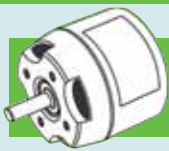


MID
Throttle
Stick
Position



HIGH
Throttle
Stick
Position





Electric Motor Installation

ELECTRIC MOTOR FITTING

Stage 1

Remove the pre-fitted IC engine mount (4 bolts with spring washers and washers). The mount and bolts are no longer required but retain the washers. Remove the battery access hatch and remove the captive nuts from behind the engine mounting bulkhead. These will be re-used to fit the electric motor.



1.1. Remove the engine mount screws



1.2. Remove the factory-fitted captive nuts

Stage 2

By using the large fuel tank neck location hole as a centre, mark the positions of the mounting screws on the bulkhead using the mounting plate as a guide. If you are fitting the recommended KMS motor (quantum 4120/05), the two upper holes for the IC mount are re-used and only the lower ones need to be drilled. Drill the mounting holes in the bulkhead using a 5mm drill.



2.1. Mark the bulkhead for the motor mount



2.2. Drill the bulkhead for the mounting screws

Stage 3

You will need to supply spacing stand-offs for the motor you have chosen. Motor lengths and fitting dimensions vary a lot from make to make. For the KMS Quantum 4120/05 motor they need to be 35mm long, 12mm wide with a 4.1mm internal bore. For these spacers, you will need 45mm M4 bolts. You can re-use the washers and spring washers from the original mount. An optional spacer/screw kit is available with all that you need for the KMS motor. Fix the captive nuts in the back of new bulkhead holes and fit the motor using the screws and washers detailed above (or appropriate to your motor). Tighten the bolts so that the captive nuts are fully home in the bulkhead. Do not let the wood of the bulkhead be crushed.



3.1. Fit the motor mount to the motor



3.2. Fit the motor to the bulkhead

Stage 4

Fit the backplate of the spinner to the propeller driver, then the propeller, washer and nut. Note – The trailing edge of the propeller should be in contact with the small moulded posts on the backplate. This is to align the propeller with the cutouts in the spinner cone. Make sure the main fixing nut is securely tightened. Fix the spinner cone to the backplate with the two self tapping screws provided with it.



4.1. Fit the spinner backplate and propeller

Stage 5

Complete the motor installation by feeding the motor wires through the hole in the bulkhead and into the battery bay.

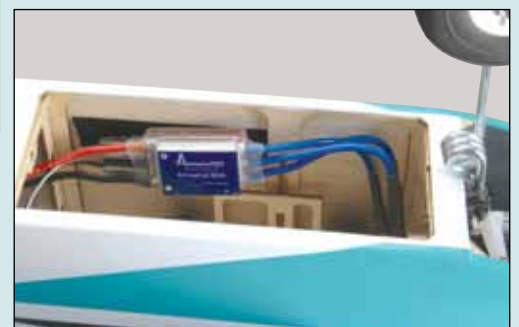


5.1. Motor wires go through the bulkhead

Stage 6

Mount the ESC (Electronic Speed Controller) to the fuselage side using adhesive foam tape. The battery is retained in the tray by the Velcro straps provided. It is a good idea

to use some more Velcro tape on the face of the tray and the underside of the battery (just 25mm is enough) to stop the battery sliding. We also recommend fixing a couple of balsa spacer blocks to the rear of the bulkhead to prevent the battery touching the captive mounting nuts and bolts if it moves forward. Set the operation of the motor/ESC by reference to the ESC instructions.



6.1. Attach your ESC with double sided tape

COMPLETING THE TUTOR 40 II

Stage 31

Your radio switch (or if you are using an ESC with a switch) can now be mounted. The radio tray has a pre-cut slot should you wish to mount the switch internally and operate it with a bent wire through the fuselage. The simplest way of fitting the switch is simply mounting it through the left-hand fuselage side (on the opposite side to the exhaust). Using the switch plate as a guide, mark and drill the mounting holes. Now cut a suitable slot for the switch. Mount using the screws supplied with the switch.



31.1. Use the switch as a guide for cutting



31.2. Fit the switch in the fuselage side

Stage 32

Locate the pre-drilled holes for the wing mounting dowels. Using a sharp knife, trim the covering away so the dowels can be pushed through the fuselage sides. Ensuring they are centrally located in the fuselage, run some medium super glue around each to secure.



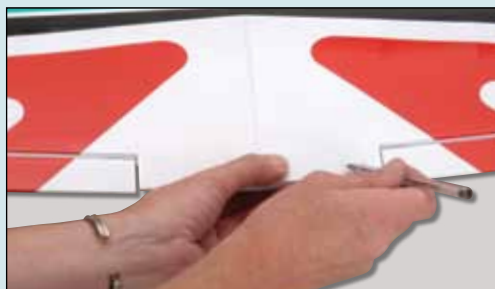
32.1. Trim away the covering



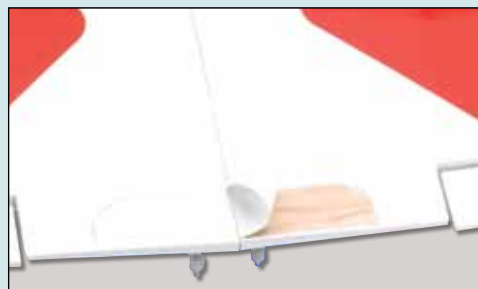
32.2. Insert the wing dowel

Stage 33

To ensure that the trailing edge of the wing is not crushed by the wing mounting bands, two plywood reinforcement plates are used on the top surface. Holding the first plate in position on the wing with its rear aligned to the trailing edge, mark its shape on the surface of the wing using a water-soluble/non-permanent felt pen. Trim away the covering inside the marked line and glue the plate in position. Repeat for the second plate.



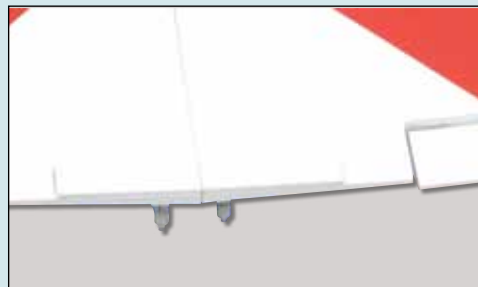
33.1. Mark the position of the first plate



33.2. Trim away the covering



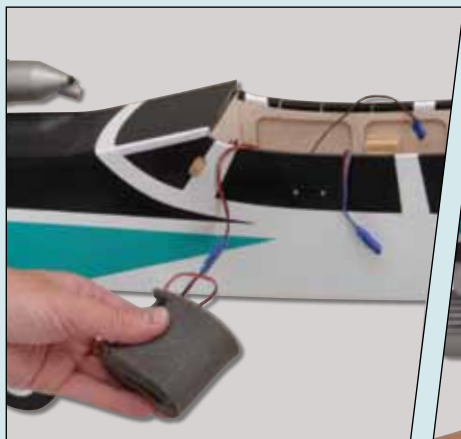
33.3. Repeat for the second side



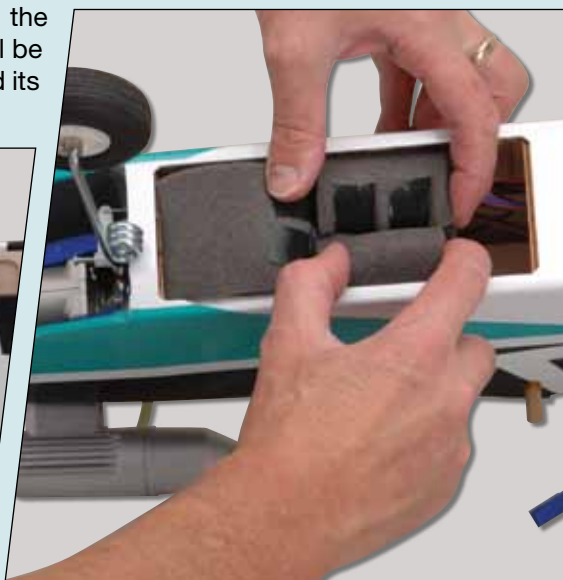
33.4. The completed wing

Stage 34

Wrap your receiver and battery (if using a separate battery for the receiver) in dense foam packing and install in the fuselage under the tank. The battery's final position will be determined once the model has had its balance point checked.



34.1. Receiver battery wrapped in foam



34.2. And installed in tank bay

FINAL R/C SETUP

Stage 35

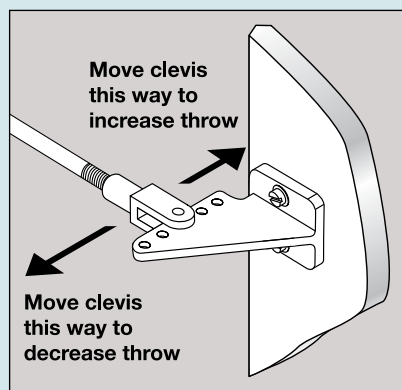
Before starting the final set-up of the Tutor 40 II, switch on the radio and ensure that all trims are in their neutral positions. Check that the ailerons, elevator and rudder are centred. If any adjustments are needed, do this by unclipping the appropriate clevis and turning it clockwise to shorten the linkage or anti-clockwise to lengthen it. Only when each control surface has been centred mechanically should you begin adjusting the surface movements (or control throws).

Stage 36

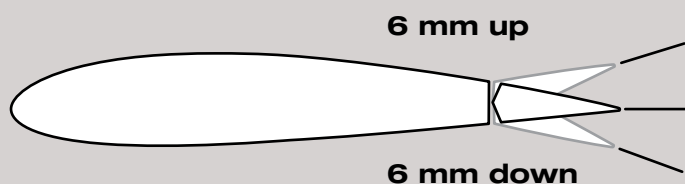
Now confirm the control surfaces are moving in the correct direction. Use the servo reversing switches on your transmitter to reverse the direction of a servo if necessary. The most popular transmitter mode (with the throttle and rudder on the left, with the ailerons and elevator on the right) is shown here.

Stage 37

For the Tutor 40 II to fly well, its control surfaces need to move the correct amount. Too little movement and the model will be slow to react to your commands; too much and it will be over-sensitive and difficult to control. If you have a modern computer radio, then it is possible to fine-tune the settings to suit you. But you should always set the model up mechanically correctly first. The movement, or 'throw' of a surface is always measured at the trailing edge (the rear) of the surface and usually at its widest point. You can use a ruler or a proprietary gauge to do this. Adjust the linkages by moving the positions of the pushrods in their control horns (as shown here) to achieve the following control surface throws:-



AILERONS:



Elevator:

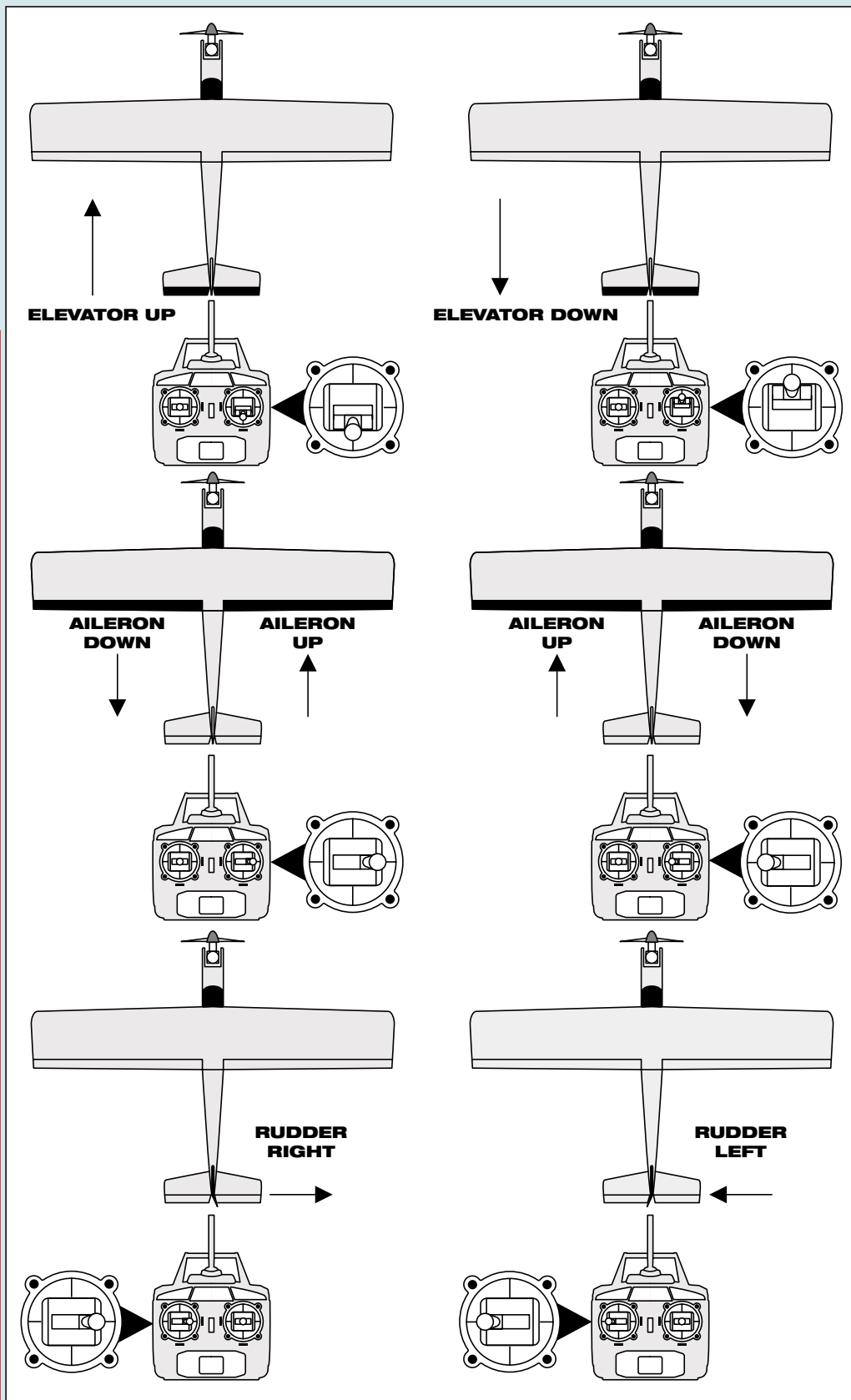
10 mm up

10 mm down

Rudder:

15 mm right

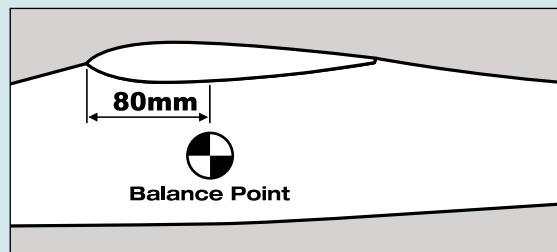
15 mm left



BALANCING THE MODEL

Stage 38

Attach the wing using all the rubber bands supplied, (although we do recommend the use of white, silicon bands as they resist fuel and last longer. You can obtain them from your local model shop) stretched diagonally across the wing dowels. Now hold the model on your fingertips at a position **80mm** back from the the leading edge of the wing. The model should balance slightly nose down. The receiver battery (or flight battery if flying with electric power) can be moved slightly forwards or rearwards to achieve this balance point without adding any extra weight. The importance of achieving the correct balance point cannot be overstated. It is essential the model balances correctly before attempting to fly it! This check should always be carried out with the flight battery in place when flying it with electric power and with the tank empty if flying it with I.C. engine power.



FLYING THE TUTOR 40 II

Stage 39

Always fly the model in a safe and suitable location, away from houses, people and power lines. It is always recommended that you enlist the help of a competent pilot and fly at a recognised club. Before flying, check that the controls move in the correct direction, and the correct amount. Always charge your radio equipment in accordance with the manufacturer's recommendations and ensure that you are familiar with the operation of your engine or motor before attempting to fly.

SAFETY

Always keep your hands and clothing clear of the spinning propeller. Fly safely and always maintain your model in good condition by thoroughly cleaning the airframe between flying sessions and checking its condition before flying and especially after a heavy landing.

NOTES



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